

(19) World Intellectual Property Organization International Bureau



(43) International Publication Date
29 July 2004 (29.07.2004)

PCT

(10) International Publication Number
WO 2004/064373 A2

(51) International Patent Classification⁷: **H04N**

(21) International Application Number:
PCT/US2004/000446

(22) International Filing Date: 9 January 2004 (09.01.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/438,894 9 January 2003 (09.01.2003) US
60/517,467 5 November 2003 (05.11.2003) US

(71) Applicant (for all designated States except US): **THE REGENTS OF THE UNIVERSITY OF CALIFORNIA**
[US/US]; 1111 Franklin Street, Oakland, CA 94607-5200 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **COSMAN, Pamela**

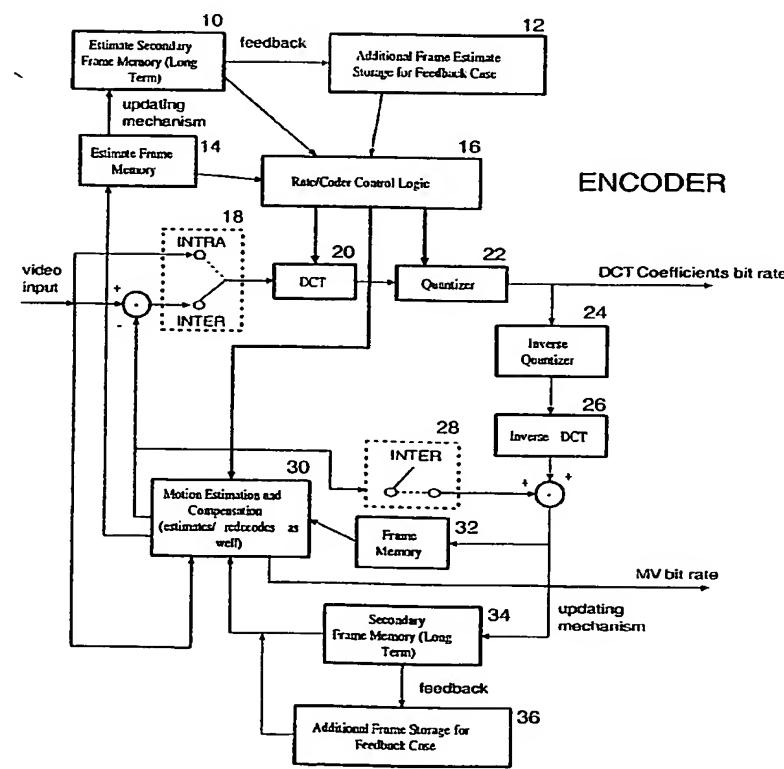
[US/US]; 8708 Nottingham Place, La Jolla, CA 92037 (US). **LEONTARIS, Athanasios** [GB/US]; 3867 Miramar Street, Apt. D, La Jolla, CA 92037-1312 (US). **CHEL-LAPA, Vijay** [IN/US]; 9168B Regents Road, La Jolla, CA 92037 (US).

(74) Agent: **FALLON, Steven, P.**; Greer, Burns & Crain, Ltd., 300 S. Wacker Drive - Suite 2500, Chicago, IL 60606 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

[Continued on next page]

(54) Title: VIDEO ENCODING METHODS AND DEVICES



(57) Abstract: A dual, and possibly multiple, frame approach is used by the invention. Embodiments of the invention include making a decision to use a long term reference frame, which is a frame other than an immediate past reference frame, to conduct INTER coding, or to conduct INTRA frame coding. Other embodiments include use of long and short term reference blocks, and make a decision between two types of INTER coding blocks and INTRA coding. In accordance with embodiments of the invention, a long term frame is a high quality frame. The high quality frame may be used as a reference frame under particular conditions.



(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— without international search report and to be republished upon receipt of that report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.